Edgewood Area - Aberdeen Proving Ground, Maryland 21010-5424
U.S. Army Soldier and Biological Chemical Command

Chemical-Biological (CB) Filtration Facilities

CAPABILITIES:

- Evaluate novel air purification processes for potential military collective and individual respiratory protection applications.
- Measure fundamental data related to air purification processes.
- Develop fundamentally-based engineering models to describe air purification processes.
- Perform lab-scale testing to refine engineering design models.
- Performance of prototype- and full-scale testing to validate engineering design models.
- Perform CW agent testing related to high-flow air purification processes.
- Investigate the integration of host system to environmental control unit and air purification process for various collective protection platforms such as aircraft, ships, shelters, buildings, and vehicles.

The CB Filtration Facilities have the capability to assess novel air purification approaches and compare competing approaches with a minimum investment in testing costs. The facilities possess several automated testing capabilities including various adsorption equilibrium data measurement systems, filter breakthrough systems, lab-scale regenerative filtration systems, and large-scale filter test apparatus. Additionally, an ability to model air purification processes using a combination of fundamental data combined with mass and energy balances has been developed and applied to regenerative filtration systems, as well as to traditional single-pass filters. There is also a unique capability to execute large-scale testing using fully instrumented test and prototype systems. These capabilities have been successfully used to assist in the design and optimization of environmental control systems for developmental military weapons platforms.

A novel data acquisition system based on desorption has been developed which allows measurement of absorption equilibrium data at least three orders of magnitude below any previously reported. The CB Filtration Facilities have also developed in-house some unique lab-scale air purification process data acquisition systems and incorporated some of these designs into prototype full-scale air purification systems, such as the U.S. Army Comanche Helicopter. The Comanche Helicopter is the Army's new light attack/reconnaissance aircraft that provides combat superiority as well as battlefield survivability against current threats. Finally, the facilities have the capability to validate and refine performance prediction models for traditional and advanced air purification processes and support integration studies.

In all, the CB Filtration Facilities are able to assist in the development of environmental control systems for military weapons platforms by evaluating proposed systems through a variety of methods. They can also evaluate and aid in the development of purification devices for commercial vendors. Industry groups might desire the services of the facilities in the design of clean rooms, gas separators, oxygen generation for both hospitals and home medical oxygen, and aircraft.

For additional information on this facility, please E-mail research.technology@sbccom.apgea.army.mil.

For information on Technology Transfer applications, please contact us by E-mail (technical.outreach@sbccom.apgea.army.mil) or by fax to 410-436-6529.

Approved for public release; distribution is unlimited.

Rev. 1-15-02